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ABSTRACT

This monograph offers some basic information for putting cooperative learning into practice. Eight popular cooperative learning approaches are first outlined. The approaches vary along two dimensions: how tasks are assigned and divided among students, and what counts toward team scores and rewards. Certain approaches have all students working on the same task, while others divide tasks among team members. Some give group rewards based on the total of individual team members' achievement, while others either do not give group rewards, or they reward groups as a whole based on something other than individual performance. A description is given of the different ways these models structure student tasks, accountability, and rewards. As an aid to determining which approaches are best suited to particular instructional purposes, four cooperative learning goals are described: (1) to improve relations among groups; (2) to help the academically handicapped; (3) to increase self-esteem; and (4) to foster positive feelings about learning and school. Practical suggestions on using cooperative learning are offered as well as resources for further study. (JD)

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SUMMER 1989

Cooperative Learning In The Classroom

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Why Cooperative Learning?

Clearly, cooperative learning is catching fire as a teaching technique. This is due in part to experts advocating for it. In California, for example, the State Department of Education's curriculum frameworks recommend it as an instructional strategy. And *Caught in the Middle*, the blueprint for quality middle-school education developed by the state's Middle Grades Task Force, echoes this endorsement. But the real force behind the growing use of cooperative learning in the classroom is pragmatic — it works. Used appropriately, this technique:

- **Helps Prepare Kids for Today's Society**. Schooling traditionally pits children against one another to work competitively in isolation. In contrast, as adults we must often team up at work, at home, or in the community to combine energies toward a common goal.

- **Promotes Active Learning**. Extensive research shows that the "minds-on" alertness of active problem solving with others sparks engagement in a way that a lecture cannot. Students learn more when they talk and work together than when they listen passively.

- **Motivates**. Students studying together experience something their peers in traditional classes rarely do — the fun and excitement of sharing information and building ideas with others.

- **Leads to Academic Gains**. Many studies show that working and talking together in the classroom leads students — including those from culturally and linguistically diverse backgrounds — to make significant academic gains compared to students in traditional classrooms.

- **Fosters Respect for Diversity**. Students who work together in classrooms are more likely to cross racial and ethnic lines in selecting their friends. Substantial research shows that when students cooperate to reach a common goal, they learn to appreciate and respect one another.

- **Advances English Language Skills**. For youngsters working on new abilities while struggling to master English as a difficult second language, group study offers many chances to learn naturally. They can listen, hear idioms, imitate, practice, and receive friendly coaching from peers.

- **Increases Teacher Effectiveness**. In combining cooperative learning with other instructional techniques, teachers not only promote academic growth but also make important discoveries. As one teacher put it:

> "When students are sitting in front of you, 25 to 30 at a time, you have no idea what's going on in their heads...as many as two-thirds of

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the class could be daydreaming. In a cooperative class with a high level of interaction, it becomes quite clear which students need help. You see problems kids have in interacting with their classmates, with basic communication skills, with life skills." (from A. T. Lockwood, *Cooperative Learning*.)

A Caution and an Invitation

But these outcomes won't happen without careful preparation and skillful application. As with any other new teaching concept, mastering cooperative learning is a process. It requires training, trial runs, and refinements over time.

"It's important not to see cooperative learning in a superficial, single, one-dimensional way."

— *A principal*

Cooperative learning is, in fact, a generic term for many techniques that all involve some kind of schoolwork done in groups. Effective use requires first becoming familiar with the major approaches and then understanding how their key elements can work to achieve different classroom results.

This Brief, which summarizes over a decade of educational research, offers some basic information for putting cooperative learning into sound practice. To help you explore this exciting new teaching tool, the following pages:

- Outline eight popular cooperative learning approaches.
- Look at the different ways these models structure student tasks, accountability, and rewards.
- Help you determine which approaches are best suited to your instructional purposes by considering four cooperative learning goals.
- Present practical tips on using cooperative learning as well as resources for further study.

If group learning is new to you, we recommend direct training as the way to start. After training and some experience, you can iron out the kinks through more reading, advanced training, or on-site guidance. The resources in the back also offer more detail on implementation. You might also consider a teacher-learning team in your school. One elementary staff extended the school day by 15 minutes, four days a week, so they could end classes early on Wednesdays to work together on curriculum. See if you and your colleagues can set aside time to plan together, prepare common libraries of instructional materials, and carry out combined activities involving more than one classroom. Cooperative learning isn't just for kids.

Critical Elements

You can see that the eight approaches vary along two dimensions: (1) how tasks are assigned and divided among students, and (2) what counts toward team scores and rewards. Certain approaches have all students working on the same task, whole others divide tasks among team members.

Major Approaches to Cooperative Learning

The first six of these eight popular approaches are general and can be used with different subjects and at many grade levels. The last two are subject specific and designed to replace traditional instruction entirely at certain grade levels.

Student Teams and Achievement Divisions (STAD). You present a lesson, and students work in groups of four or five, helping each other master the problems on a set of worksheets. Each student takes a quiz, and a team score is calculated based on each student's improvement over his previous scores. A weekly class newsletter praises high-scoring teams. (Developed by Robert Slavin.)

Teams-Games-Tournament (TGT). Students help each other learn the material, but instead of taking individual tests, they compete against similar-level classmates from other teams in "tournaments" where they earn points for their teams. High-scoring teams get public recognition. (Designed by D. DeVries and Robert Slavin.)

Learning Together (LT). Students work together on a group assignment sheet. They are rewarded with praise, grades, or tokens based on group task performance and how well they work together rather than an individual scores. (Developed by brothers David and Roger Johnson.)

Jigsaw (JIG). You give each student in the group unique information to study on a topic, such as different parts of a biography or different aspects of a country. In their groups, students pool what they've learned. Next they go to "expert" groups where they learn further specifics, then return to their teams to tutor their teammates. Students test individually and receive individual scores. (Originated by E. Aronson.)

Jigsaw II (JIG II). You give all students the same material, such as a biography or text about a country. Students become experts, then teach the group specific subtopics such as the early life of Thomas Jefferson, his achievements in office, and his guiding ideals. Team scores are calculated from individual quiz scores and are publicized in a class newsletter. (Modified from JIG by Robert Slavin.)

Group Investigation (GI). You assign each group a different project. Students research topics, organize material, and present findings to their classmates. They decide among themselves the best way to do this. The emphasis is on higher level learning, applying and synthesizing ideas, and drawing inferences. (Created by Shlomo Sharan and colleagues.)

Team Accelerated Instruction (TAI). This math-specific technique was developed for class groups in grades 3 to 6 with too great an ability range to be taught the same material at the same rate. Each student gets a diagnostic test. Each then works through a sequence of units at her own pace, but teammates work in pairs, checking each other's work and tests. Team scores are based on individual scores and on work covered. Certificates are awarded to the team. (Developed by Robert Slavin and colleagues.)

Cooperative Integrated Reading and Composition (CIRC). This technique, for reading and writing in upper elementary grades, pairs students to work on cognitively engaging activities such as summarizing stories to one another and mastering comprehension skills. Students follow a learning sequence: teacher instruction, team practice, pre-assessments, and a quiz. Teammates decide when each student is ready for the quiz, and you award certificates based on individual team members' average performance. (Also by Robert Slavin and colleagues.)

Some give group rewards based on the total of individual team members' achievement, while others either do not give group rewards or reward groups as a whole with no individual achievement basis.

The various structures for tasks and rewards form four potential patterns:

1. Group rewards based on individual achievement with all students doing the same task — STAD, TGT, TAI, CIRC.

2. Group rewards not based on individual achievement or no group rewards with all students doing the same task — LT.

3. Group rewards based on individual achievement with students working on different tasks — JIG II.

4. Group rewards not based on individual achievement or no group reward with students doing different tasks — JIG, GI.

"Cooperative learning helps students work well with others, learn to really listen, take leadership, and strengthen their thinking and problem-solving skills. Students can also get a lot of information pretty fast."

— District curriculum specialist

As these patterns might suggest, the ways you choose to manage rewards, tasks, and accountability will influence the potential outcomes more than any other factors — regardless of approach. Let's look at how these key elements work.

Accountability. This insures that both you and your students are contributing. Individual accountability gives you a way of knowing what part each student played in the group work. You can set it up in several ways: (1) through group rewards that are explicitly based on each member's measurable achievement by, for instance, totaling scores on individually graded worksheets or quizzes; (2) by having students perform unique tasks in their group so that, as an example, one reports on the plot of a story, another on the characters, a third on the language, a fourth on the tone; (3) by providing incentives for students to learn from each other — for example, by encouraging team members to learn a new concept or study for tests together but then scoring worksheets and quizzes individually.

But group accountability is also essential. If you hear team members fervently discussing the Halloween parade or school dance instead of how to do long division or create a good paragraph, they aren't going to benefit academically from group learning because they aren't actually engaged in working on something together. You must not only clearly define their task(s), but also monitor groups to insure that they are "on task."

Rewards. Here we have two issues: what is rewarded and how rewards are calculated. You can choose to reward qualities such as enthusiasm or cooperation. Or you can reward academic achievement. If you choose academic achievement, you can reward straight achievement (e.g., 90 and above equals an A, 80 and above a B, and so on) or you can calculate improvement points over past individual performance (Jim got ten points higher this week than last. His team had thirty improvement points overall).

The advantage of rewarding academic achievement by improvement points is that all students at any ability level can improve, thus making a contribution to their team's effort. That's a real motivator. Unlike a simple achievement score, improvement points also focus students on working to exceed their own "personal best" instead of looking around to see who might be doing better.

In calculating scores, you can total the individual sum for a group score (three tens and a nine total thirty-nine for the Green Team) or you can give a team grade or score that is based on something other than individual performance (the Green Team gets forty points for excellent teamwork, or the Green Team's project earns forty points). You can also praise or validate students while giving no formal rewards ("Excellent problem-solving, Green Team") — a strategy used by several approaches not described here.

Tasks. You can give all students the same task or give them different, specialized tasks. Specialized tasks work well when you want to cover a large body of information, such as a topic in social studies, science, or history . Students can work on different subtopics — a country's natural resources, government, exports; the body's respiratory, circulatory, digestive systems — but share the same resource materials and library books. When everyone needs to learn the same specific information or skill — times tables, vocabulary words, algebraic formulas, writing techniques, historical dates — all students do the same task.

Which Approach Suits Your Purpose?

Cooperative learning is particularly useful in achieving four major goals:

- increasing academic achievement
- improving relations among groups of students
- helping academically handicapped students
- fostering positive feelings about learning and school

Of the approaches described in the box, several foster all four goals simultaneously, which is part of what makes cooperative learning such an effective way to teach. But certain approaches foster one or another specific goal.

The first step in picking the right cooperative learning approach is to decide which of the potential goals is your highest classroom priority. Teachers in different situations have different priorities. For example, in a class where the majority of students have borderline academic skills, your goal might be to increase achievement. But if your students are academically strong, have already covered the basic course materials, and are excited about learning, you might just want to lead them into new areas.

"Learning groups give me time I wouldn't ordinarily have to work with individual students while the others are busy learning."

— Veteran 4th grade teacher

In considering each goal, remember how the structure of awards, tasks, and accountability influences outcomes. As you do this, you will begin to sort out which cooperative learning approach will best meet your needs.

Goal: Increase Academic Achievement. Set up a system of group rewards in which a group total is based on the sum of individual scores. Thus on a quiz, the team whose members got a total of thirty-nine would score higher than the team whose members got thirty.

Bear in mind, though, that just working together is not enough to increase achievement. One smart or hard-working student could do all the work for the group, allowing others to freeload. So it's essential to have individual accountability. Students must know that what they do as individuals affects the entire group's reward. This motivates them to help one another and encourage each other to do well. And it has the extra advantage of giving all students — even those who usually do poorly with traditional instruction — the chance to succeed through their group's success.

"Instead of just one teacher, students had one-on-one teaching. We had total participation, and the kids were thrilled! Not a one didn't get it, not even the slow learners."

— Teacher describing a 1st grade math lesson with teams of two

A second essential element is engagement. The more actively a student is engaged in the group task — explaining, adding information, or figuring things out — the more he learns. And students learn most when giving high-level explanations that describe in detail how to solve a problem. In a mixed-ability group, this often means that a high-ability student will tutor low-ability students. This is good because these students form relationships based on giving and receiving help, which in turn increases both their motivation and academic performance.

But middle-ability students can disengage, either because they don't need much help or aren't asked to give it. To remedy this, you can assign different tasks and/or specific roles so everyone has an essential contribution to make. Roles can include notetaker, "gofer," monitor, encourager. You also prompt teamwork when you talk with students about multiple abilities — the idea that no one is good at everything, but everyone is good at something, and by working together we can do an excellent job. Frequently emphasize the five elements of successful cooperation: positive interdependence, face-to-face interaction, individual accountability, social skills, and group work.

So which approach should you choose? Among mixed ability students, STAD has most successfully led to higher academic scores. But TGT and GI also work very well. JIG is least successful for this purpose, but that may be because it strives for higher level learning.

Grade and subject matter will also affect your decision. In secondary school, research on group learning techniques shows that eighth and ninth graders make the greatest achievement gains. And cooperative learning has proven more effective in teaching mathematics and language arts than science.

But for your class, you might have a dual goal — to increase academic achievement while covering a complex topic that requires students to do different tasks. Jigsaw II allows for both specialized tasks and group re-

wards based on individual learning. Thus, you might choose Jigsaw II even though other approaches more consistently foster academic growth .

Goal: Improve Relations Among Groups. Friendships among students with different ability levels, different native languages, or diverse backgrounds increase when they study cooperatively in learning groups. Almost any of the approaches will work to meet this goal. Research also shows that friendships are more likely to develop when classmates work together.

Why this happens is unclear. At this point, we're not certain whether it is the result of simple social contact in a group or whether something specific about cooperative schooling makes students respect and like one another more. What matters most is that cooperative learning genuinely helps improve student relationships.

"Cooperative learning teaches kids how to socialize, compromise, and mediate — all wonderful life skills!"

— Elementary teacher

Goal: Help the Academically Handicapped. Many teachers face the difficult challenge of meeting the needs of students mainstreamed into their classroom. Any of the group learning techniques can be excellent for integrating special students. Working together on a task overcomes the usual barriers to interaction and friendship between academically handicapped and normal-progress students, promoting more overall acceptance. Even better, you are helping special students *while also* enhancing the achievement of your normal-progress students. Best of all, group learning allows academically handicapped students to work alongside their peers as full participants.

Emotionally disturbed adolescents can also make strides with group learning, though their gains are less dramatic. TGT, for example, can improve these students' behavior, but it does not appear to affect their academic achievement.

To make sure a special student doesn't hurt a group's score, you can (1) reward teams for their cooperative effort, (2) change group compositions from time to time, or (3) give special students manageable tasks that make a genuine contribution.

Goal: Increase Self-Esteem. The major approaches to group learning (STAD, TGT, TAI, Jigsaw, and LT) all help bolster self-esteem. The reward structure plays a starring role here. Group rewards let all students know they can succeed. This success builds confidence by making each student feel she has what it takes to learn and do well academically.

Self-worth is also enforced by individual accountability, which leads to peer norms favoring achievement. All students are made to feel important when their classmates *want* them to succeed. More than that, they tend to feel effective, relating success to what they've done rather than to luck or some other external factor.

Goal: Foster Positive Feelings About Learning and School. Research shows that any of the cooperative learning approaches prompts students to like school more and to see their peers as supportive. Each promotes friend-

ship and feelings of mutual concern between ethnic groups. The findings about this goal are the least consistent, however — probably because it is harder to measure feelings. Still, half of the studies conducted on students' liking of school showed positive growth among students in learning groups.

Group problem solving, listening to a new idea, quizzing each other on facts and figures, tutoring fellow students, getting a helpful explanation — these activities all stretch students' social and academic skills, enhance mutual respect, and ignite interest in learning. In the process, students also grow to appreciate how each one contributes to the whole.

Pointers Toward Success

"Working together gives kids ownership of the class, so they feel a part of it."

- It's a good idea to introduce cooperative learning early in the year before students establish their own friendship groups and study patterns and become resistant to change.

- Group learning works best when you mix ability levels. In subject areas like math, art, spelling, reading, or geography, you can combine a fast, moderate, and slow worker so that each group has at least one potential tutor. To foster English skills in students who start out in a different language, mix an English-only speaker with a student who speaks only Spanish or Vietnamese or Chinese and a bilingual student to provide the link. Mixing culturally diverse students is another possible combination. You can also combine different abilities to get a strong team — while also reinforcing the idea of multiple abilities. For example, for editing papers, one teacher recommends that "each group have a good speller, someone good grammatically, and someone with a flair for choosing words."

"It's harder to be introverted in a group of four than in a group of 30."

— High school math teacher

- Shuffle students among the teams over the year so that each student has the chance to be on a high-scoring team and to work with a variety of classmates.

- Certain approaches use competition between teams to motivate (e.g., STAD, TGT, and Jigsaw II). Some teachers believe this contradicts the whole notion of cooperation. But many of the approaches don't use competition, so you still have plenty of options. To avoid competition: give each group a different task; name groups with colors or words that avoid value judgments or hierarchies; reward teams for their own performance growth by calculating improvement points.

- Give assignments that require students to cooperate actively. For example, simply assigning memorization provides no incentive to work together. But when you have students first memorize dialogue, then act out various characters in a story, they have to cooperate in order to complete the assignment successfully.

If your students are new to teamwork and group learning, "artificial assignments" — ones that don't require cooperation — are useful. Once students feel comfortable working side by side, tasks calling for active cooperation will have more chance of success. One straightforward group task for beginners is to have each team name itself. Some teachers ask for names that relate somehow to the group's topic. Reaching consensus on a name can be tough, but it's also highly engaging.

- If your students are in the last years of high school with no prior cooperative learning experience, you will have to orient them to new classroom procedures and teach them group learning skills, such as how to plan work together, how to assign tasks and roles, and how to keep group attention focused.

- Cooperative learning means moving away from a right-answer orientation. To do this, students of all ages have to learn how to ask for and give constructive help. Guide students to ask process questions instead of just giving the precise right answer when asked for help. For example: What answer did you get? Why do you think that? How did you try to solve the problem? What does it mean to add two numbers?

"Cooperative learning helps develop a real sense of community in my classroom."

— A 9th grade history teacher

- One good way to teach cooperative skills at any grade level is to train students in their assigned roles. What does a task organizer, monitor, summarizer, checker, or praiser *do*? First describe these roles to the whole class, perhaps through role plays. Or ask students, "What would be a good way to do this?" For younger children, two-person teams are a good way to introduce working together. One teacher suggests outlining each role specifically: "Partner A does this." "Partner B does that."

  Next, lead the class in a group discussion. Finally, model each role to students as you visit the teams and validate students who use them appropriately. Be sure that students switch roles regularly so they all learn many skills.

- To encourage cooperation, add bonus points to teams that work together or carry out their roles well — points over and above the group score based on individual performance.

- Small groups can develop hierarchies, with some students being more active and influential than others. You can minimize this by establishing cooperative norms ("everybody helps") ahead of time and validating students when they practice these norms. Assigning roles and rearranging group memberships can also counteract this tendency.

- Some evidence suggests that certain students may have a preferred study mode — either cooperative or competitive. If you teach in a community that values cooperation, you may find it easier to introduce and use cooperative learning. Conversely, if group learning does not "take" readily, it may reflect something outside the classroom rather than anything you are doing. Being aware of this possibility can make your job easier.

"When you plan and guide and use cooperative learning to accomplish specific goals, it's enormously helpful."

— An English teacher

- Cooperative learning inherently involves some noise, but you can encourage what one teacher calls, "good, productive, interactive noise, where everyone is sensitive to the needs of everyone else" by monitoring groups to see that they stay on task. With young students, you may first have to talk about what staying on task in a group setting means.

Remember, you're handing over the reins. Before you do, be sure that you and the students are clear on the process. Cooperative learning takes time and patience. But those teachers who lay the proper groundwork and persevere say that the paybacks are unquestionably worth the effort.

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Resources

Organizations

The following two organizations have information for teachers on implementing cooperative learning techniques. They also conduct workshops and provide training.

Center for Research
on Elementary and Middle Schools
Johns Hopkins University
3505 North Charles Street
Baltimore, MD 21218
(301) 338-7570

The Cooperative Learning Center
202 Pattee Hall
University of Minnesota
Minneapolis, MN 55455
(612) 624-7031

The following organization publishes a quarterly newsletter and holds an annual conference for teachers and others interested in learning about and using cooperative learning.

California Association for the Study of Cooperation in Education
136 Liberty Street
Santa Cruz, CA 95060
(408) 429-6550

Books

Here is a summary of several excellent books on cooperative learning. Other references follow.

Cohen, E.G. 1986. Designing Groupwork: Strategies for the Heterogeneous Classroom. New York: Teachers College Press. Shows how to design study units for students of mixed abilities. Based on classroom experience with Finding Out/Descubrimiento, a bilingual elementary math and science curriculum with adaptations for non-English proficient students.

Graves, N., and Graves, T. 1987. Cooperative Learning: A Resource Guide. Santa Cruz, Calif.:International Association for the Study of Cooperation in Education. This is a comprehensive annotated bibliography that includes information on cooperative learning in science, computers, social studies, language arts, learning a second language, as well as sports and games.

Johnson, D.W., Johnson, R.T., Holubec, E.J., and Roy, P. 1984. Circles of Learning. Alexandria, Va.: Association for Supervision and Curriculum Development. A monograph, this introduction to cooperative learning for parents, teachers, and administrators offers a detailed illustration of one district's implementation.

Slavin, R.E. 1983. Cooperative Learning. White Plains, N.Y.: Longman. This review of research on cooperative learning is well-organized, and chapter summaries offer thoughtful insights.

Slavin, R.E. 1986. Using Student Team Learning, 3d ed. Baltimore, Md.: Center for Research on Elementary and Middle Schools, Johns Hopkins University. Detailed information on implementing Student Teams-Achievement Divisions (STAD) and Teams-Games-Tournaments (TGT) as well as more general information. Mathematics and language arts programs are included.

For Further Reading

Aronson, E., Blaney, N., Stephan, C., Sikes, J., and Snapp, M. 1978. The Jigsaw Classroom. Beverly Hills, California: Sage.

Johnson, R.T., and Johnson, D.W. 1984. Structuring Cooperative Learning: Lesson Plans for Teachers. New Brighton, Minnesota: Interaction Book Co.

Kagan, S. 1985. Cooperative Learning Resources for Teachers. Riverside, California: University of California, Department of Psychology.

Lockwood, A.T. 1988. "Cooperative Learning." Resource Bulletin, No. 4. National Center on Effective Secondary Schools, Madison, Wisc.; University of Wisconsin.

Sharan, S., and Sharan, Y. 1976. Small-Group Teaching. Englewood Cliffs, New Jersey: Educational Technology Publications.

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Other Far West Laboratory publications that may interest you:

The Intern Teacher Casebook, Judith Shulman and Joel Colbert, 1988.

The Mentor Teacher Casebook, Judith Shulman and Joel Colbert, 1987.

Student Dropouts: Implications for Policymakers, Myrna Matranga and Douglas E. Mitchell, 1987.

Staff Development in California: Public and Personal Investments, Program Patterns, and Policy Choices, Judith Warren Little, et al., 1987.

The Quality of Chapter 1 Instruction: Results from a Study of 24 Schools, Brian Rowan and Larry F. Guthrie, 1988.

Long-Range Impact of an Early Intervention with Low-Income Children and Their Family, J. Ronald Lally, Peter L. Mangione, and Alice S. Honig, 1987.

The Promise of Distance Learning, Dean Bradshaw and Patricia Brown, 1989.

Programs for Preparing Teachers for Working with Diverse Student Populations, Beverly Cabello and Roger Dash, 1988.

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